

ONTARIO MINISTRY OF ENVIRONMENT



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OPERATING SUMMARY

CITY OF

BURLINGTON- ELIZABETH GDNS.

WATER POLLUTION CONTROL PLANT

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1974
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1974

Burlington ~ Elizabeth Gardens
: water pollution control plant.

81267



Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, CENTRAL REGION
P. Cockburn

MANAGER, UTILITY OPERATIONS
A. Thomas

BURLINGTON-ELIZABETH GARDENS
WATER POLLUTION CONTROL PLANT

operated for

THE CITY OF BURLINGTON

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director



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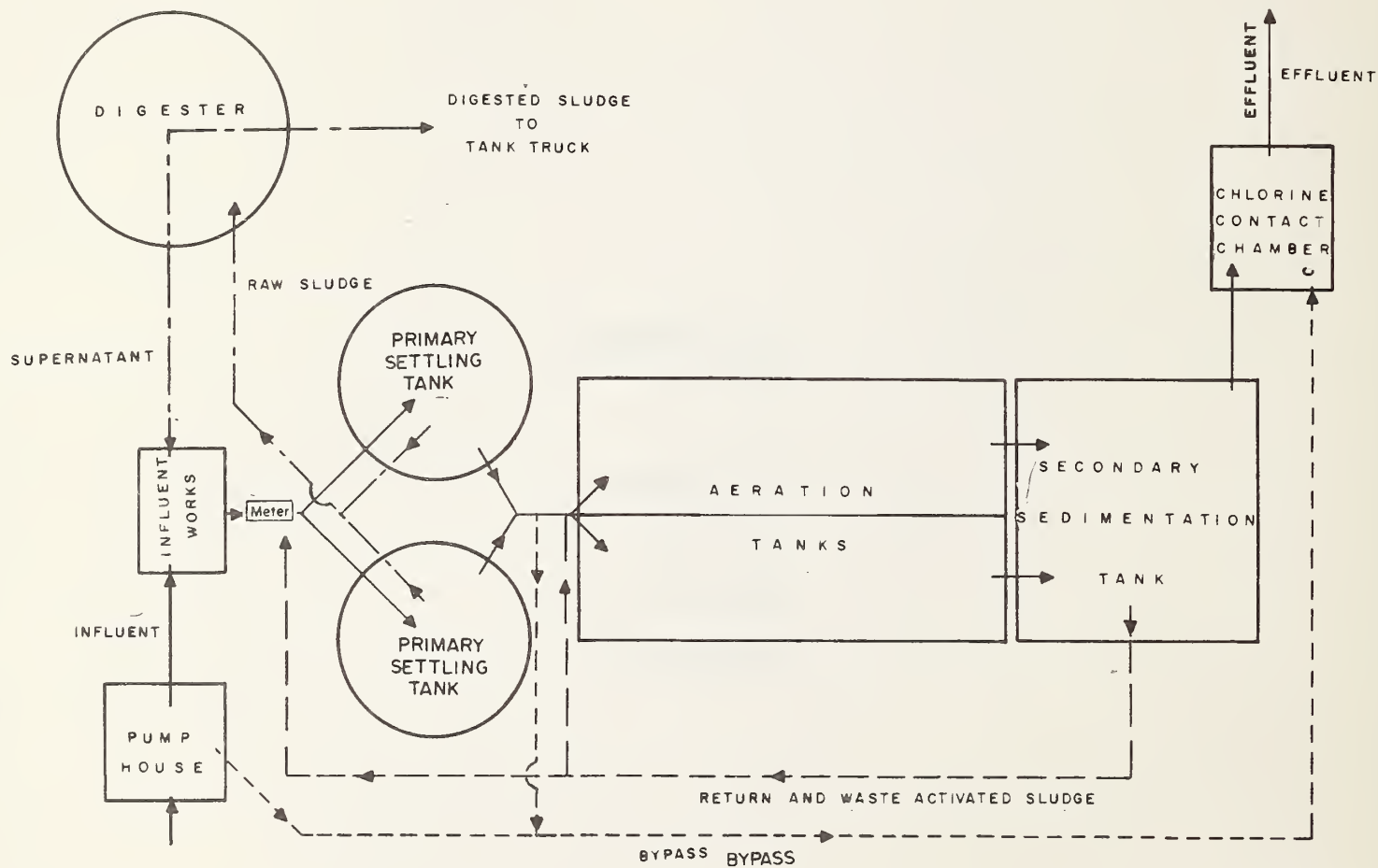
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1002

1360

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CITY OF BURLINGTON
ELIZABETH GARDENS WPCP



DESIGN DATA

PROJECT City of Burlington
Elizabeth Gardens WPCP

PROJECT NO. 2-0028-58

TREATMENT Activated Sludge

DESIGN FLOW 0.750 mgd

DESIGN POPULATION 7,500

BOD - Raw Sewage 253 mg/l
- Removal 90-95%

SS - Raw Sewage 280 mg/l
- Removal 95%

LIFE STATION

Pumps (@ 35' tdh)

One Fairbanks-Morse 600 gpm (electric)
One Smart-Turner 250 gpm (electric)
One Smart-Turner 125 gpm (electric)
One Smart-Turner 300 gpm (gas)

PRIMARY TREATMENT

Comminution

Type: Barminutor
Size: Model B (18")

Grit Removal

Type: Air degritter (with 4 Colaflex
diffusers)
Size: 14' x 8' x 7' (avg depth)
Retention: 10 min

Primary Sedimentation

Type: Dorr
Size: Two 22' dia x 9' swd (6250 gal)
Retention: 2 hours
Loading: Surface, 980 gal/ft²/day
Weir, 5,430 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Diffused air, Single-pass
Size: Two 98' x 19 $\frac{1}{2}$ ' x 12'
(44,000 cu ft or 274,000 gal)
Retention: 8.8 hours

Air Supply

Two Hoffman Cyclo Blowers
Size: 750 cfm each

Diffusers

60 Colaflex diffusers per tank

Secondary Sedimentation

Type: Dorr
Size: Two 40' x 40' x 10' swd (8,600 gal)
Retention: 2.75 hours
Loading: Surface, 470 gal/ft²/day
Weir, 4,690 gal/ft/day

CHLORINATION

W & T 200 lb/day

Chlorine Contact Chamber

Retention: 10 min

OUTFALL

- to Lake Ontario

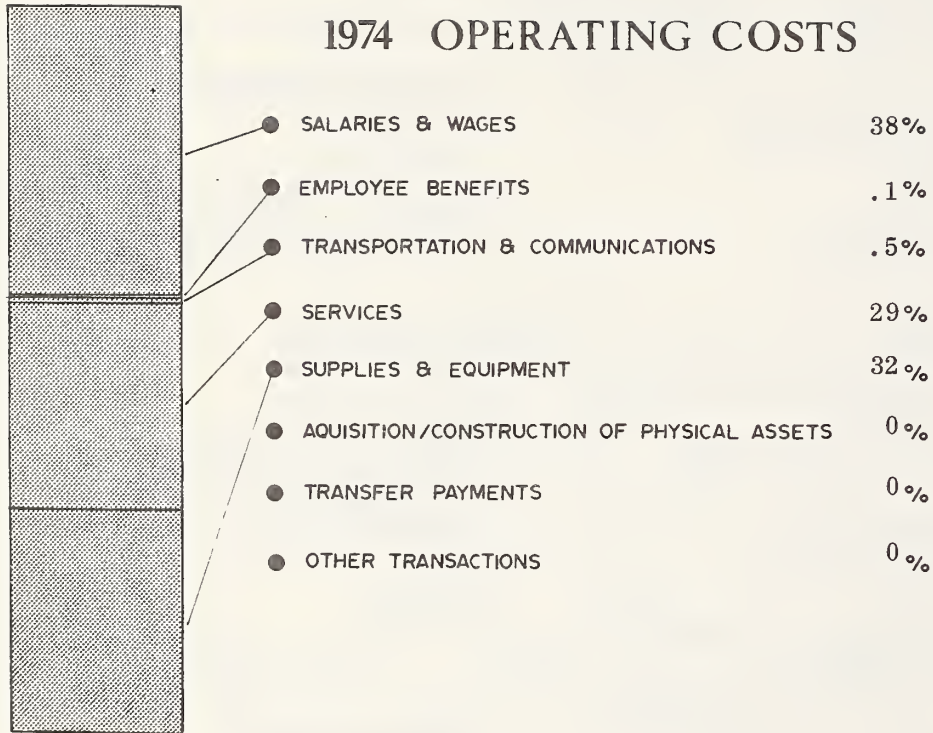
SLUDGE HANDLING

Digestion System

Type: Single-stage with one Dorr-Oliver
draft tube mixer
Size: One 45' dia x 20' swd (31,600 cu ft or
196,000 gal)
Loading: 1.6 lb/ft³/mo

ANNUAL COSTS

1974 OPERATING COSTS



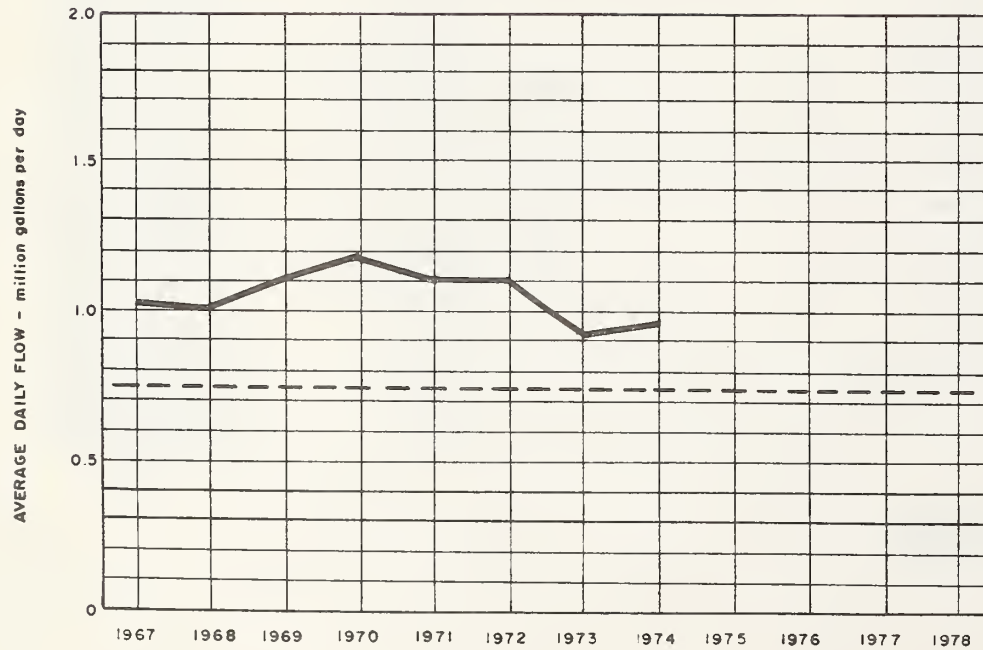
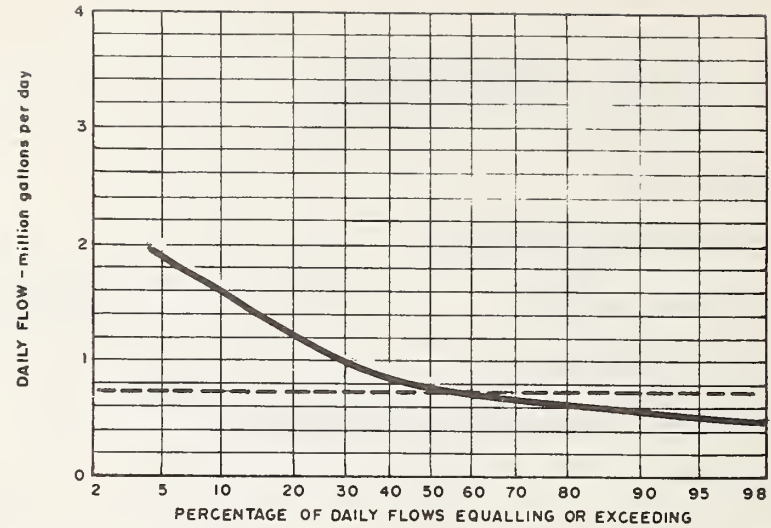
YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G.	¢/lb BOD
1969	390	28,721	74	6
1970	431	26,161	61	5
1971	402	29,898	74	6
1972	386	26,545	69	8
1973	339	26,132	77	7
1974	337	36,651	109	12

OPERATING EXPENDITURES

Regular Staff	\$ 13946	\$
Casual (Unclassified) Staff		
TOTAL SALARIES AND WAGES		13946
TOTAL EMPLOYEE BENEFITS		38
TOTAL TRANSPORTATION AND COMMUNICATIONS		194
Insurance	640	
Sludge Haulage	9252	
Repairs and Maintenance	604	
Other Services	194	
TOTAL SERVICES		10690
Machinery and Equipment	1186	
Chemicals	1111	
Utilities	6754	
Other Supplies and Equipment	2732	
TOTAL SUPPLIES AND EQUIPMENT		11783
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	\$ 36651

PROCESS DATA FLOWS

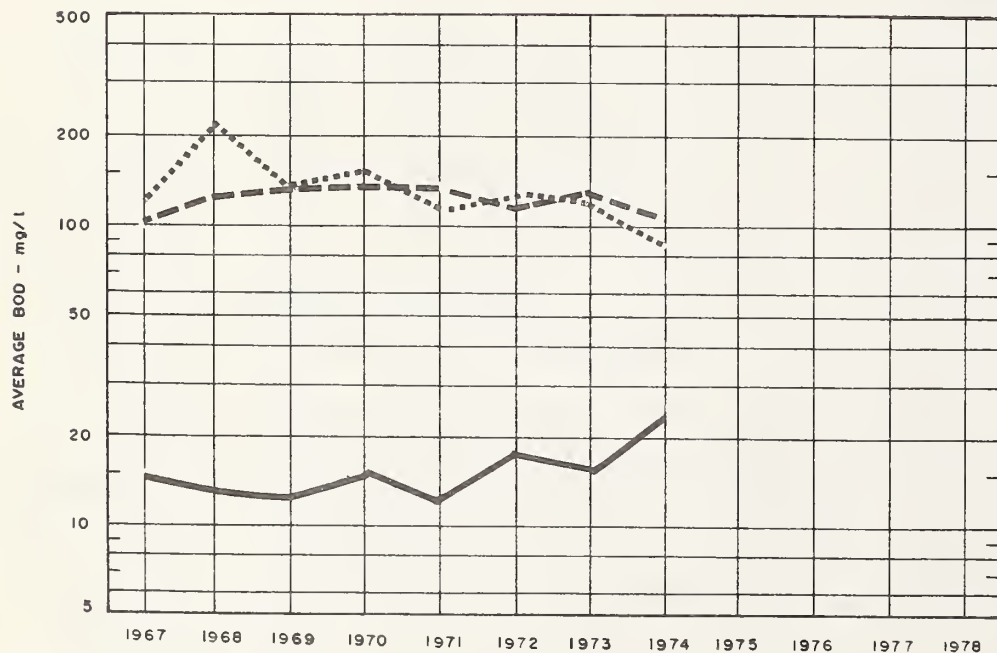
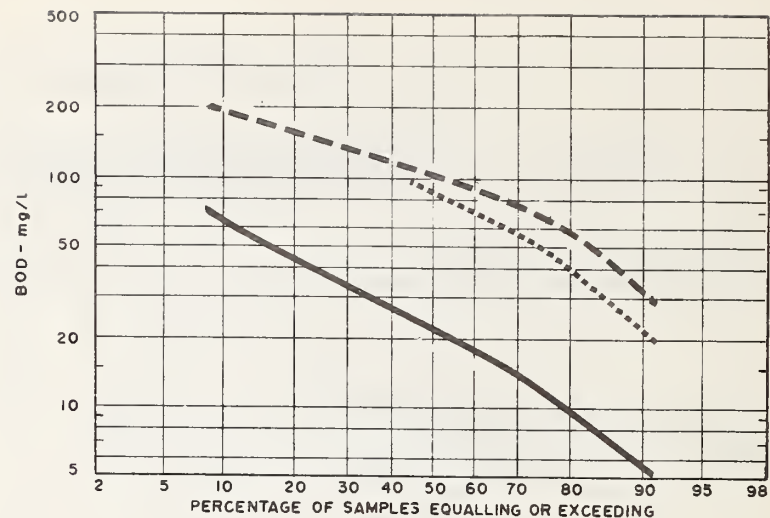


DESIGN CAPACITY — — — — —

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l P	EFFLUENT mg/l P
						%	10 ³ pounds			%	10 ³ pounds		
JAN	38.9	1.26	2.50	130	26	85	40.4	140	20	86	46.7	6.8	5.0
FEB	26.1	.93	2.47	120	70	42	13.0	120	30	75	23.0	7.6	6.0
MAR	33.9	1.09	2.14	34	16	53	6.0	40	10	75	10.2	2.1	1.4
APR	35.5	1.18	2.25	110	14	87	34.0	60	10	77	17.8	5.5	3.1
MAY	38.4	1.24	2.45	110	60	45	19.2	180	25	86	59.5	5.2	4.6
JUNE	25.7	.86	1.67	130	15	88	30.0	160	15	91	37.3	6.4	
JULY	21.1	.68	.90	120	5	96	24.3	190	15	92	39.0	8.5	4.4
AUG	21.4	.69	1.25	240	5	98	50.3	300				2.9	3.2
SEPT	20.9	.70	1.18	50	17	66	6.9	75	15	80	12.5	8.4	4.0
OCT	18.8	.61	.79	95	24	75	13.3	150	40	73	20.7	8.0	6.0
NOV	21.6	.72	1.16	80	18	78	13.4	130	20	85	23.8	5.5	5.5
DEC	24.0	.77	1.21	130	18	86	26.9	145	30	79	27.6	3.5	4.2
TOTAL	336.8	-	-	-	-	-	296.4	-	-	-	404.2	-	-
AVG.	28.1	.92	MAXIMUM 2.50	112	24	79	24.7	141	21	85	33.7	5.9	4.3
No. of Samples	-	-	-	12	12	-	-	12	11	-	-	12	11

BIOCHEMICAL OXYGEN DEMAND

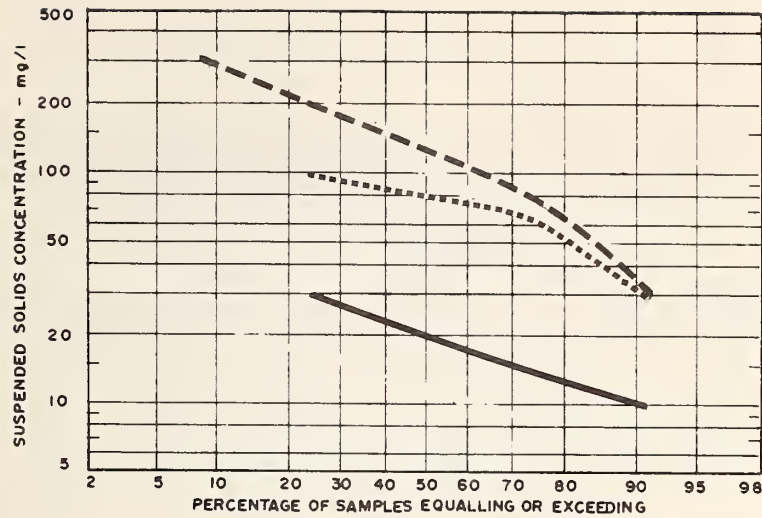


PLANT INFLUENT - - - - -

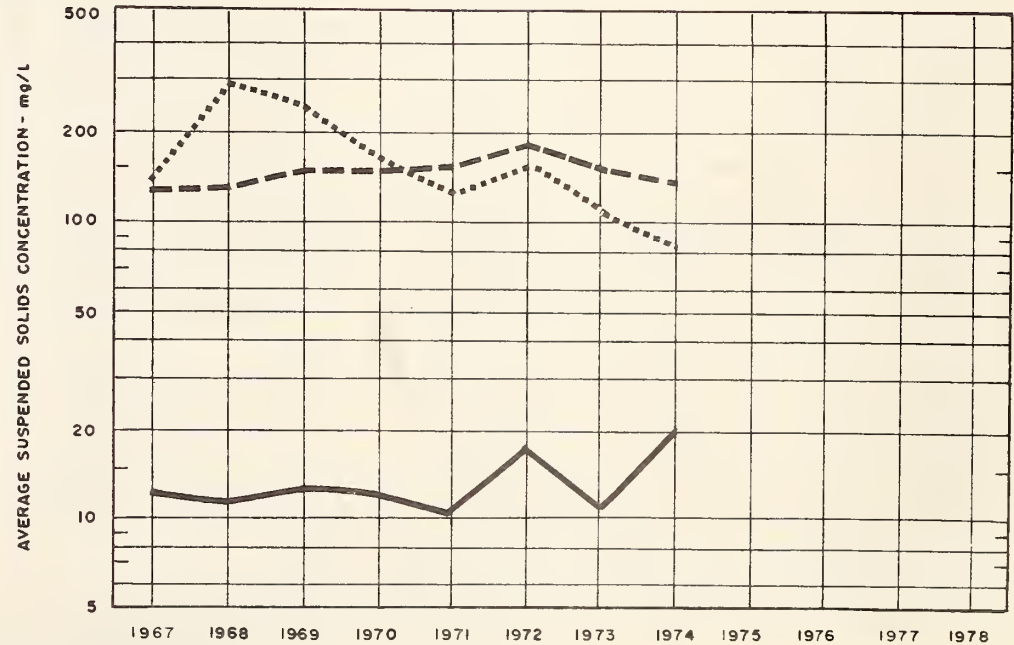
PRIMARY EFFLUENT

PLANT EFFLUENT _____

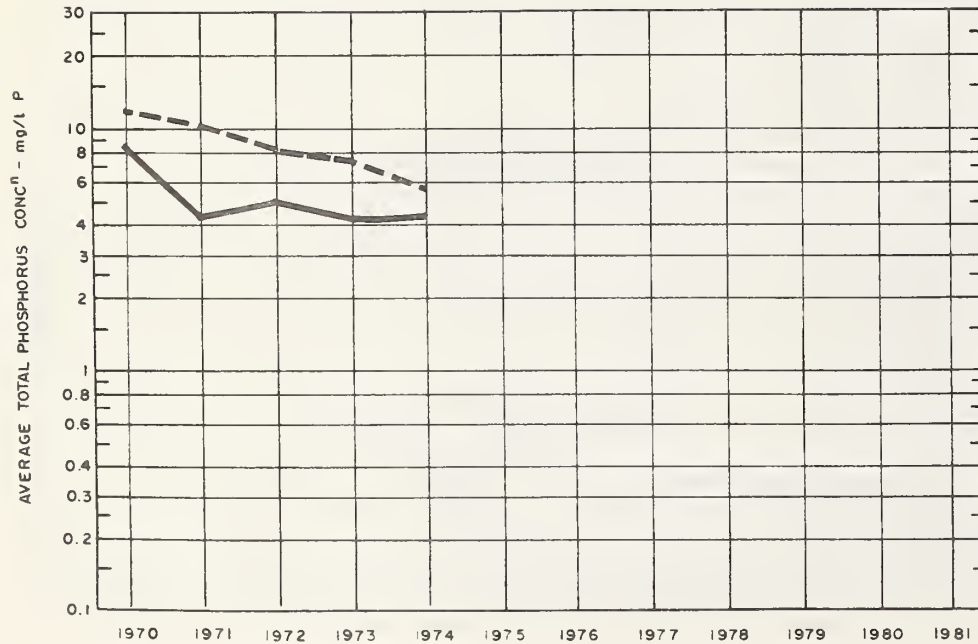
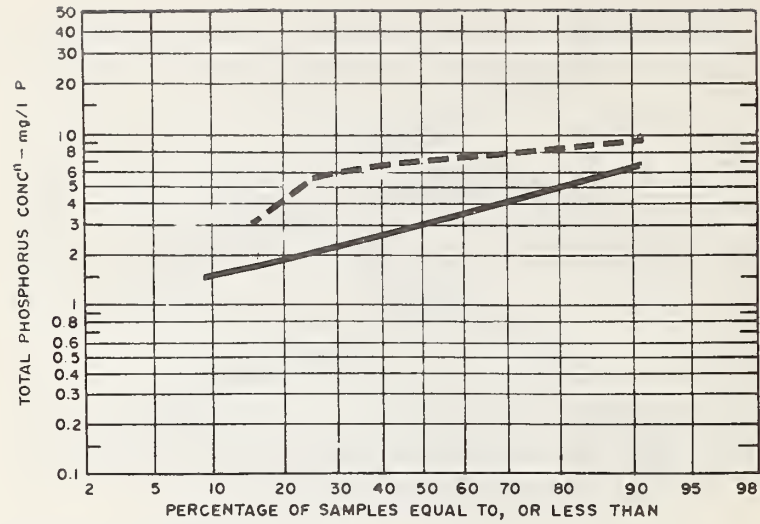
SUSPENDED SOLIDS



PLANT INFLUENT
 PRIMARY EFFLUENT
 PLANT EFFLUENT



PHOSPHORUS



PLANT INFLUENT - - - - -

PLANT EFFLUENT —————

TREATMENT DATA

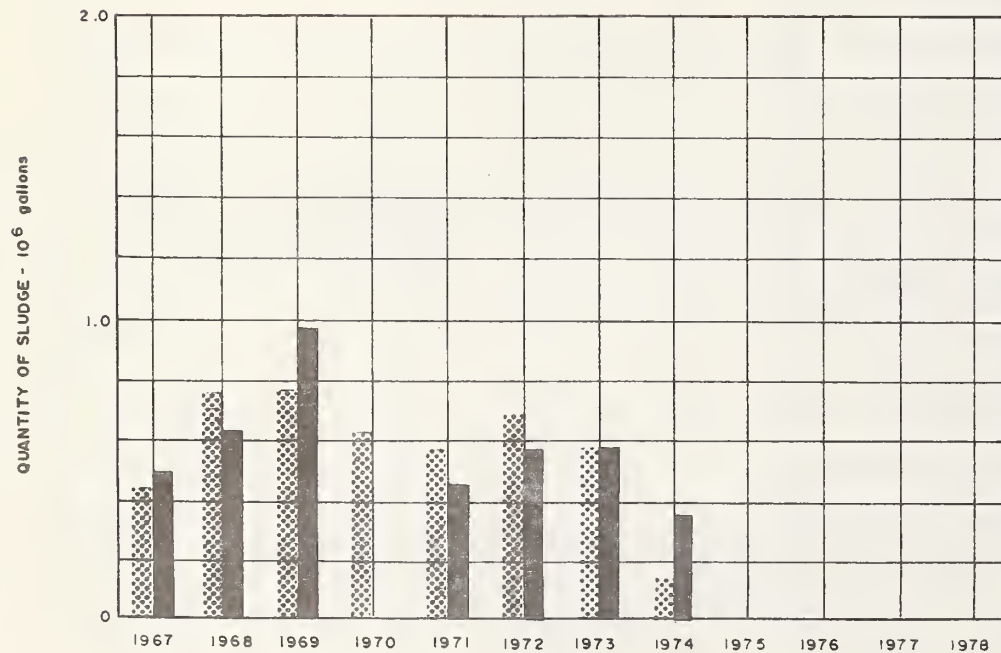
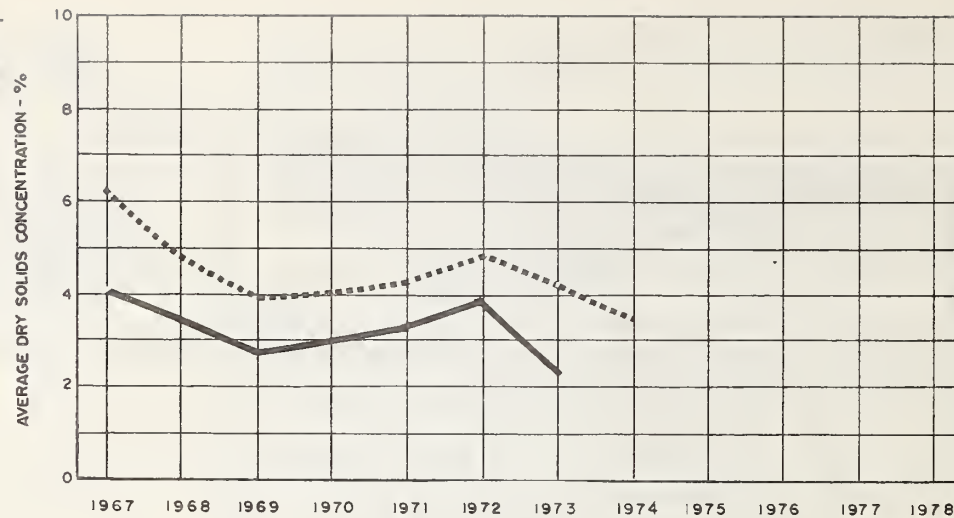
MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL ₂ USED pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day ⁻¹	AIR 1000 ft ³ lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	21			110	90	1500	.34	1.4	97			91				539
FEB	45			130	90	1200	.30	3.1	64	3.4	80	262			.2	1557 106 274*
MAR	50			34	40	1400	.10	10.1				18				542*
APR	15			100	70	1600	.27	2.1								358*
MAY	20	457**	2.7	100	90	1400	.31	4.5								481*
JUNE	24	775	3.0	120	100	1400	.28	2.3								345*
JULY	34	832	3.9	80	70	1200	.17	4.1								523*
AUG	25	742	3.5	28	40	1300	.06	13.4								285*
SEPT	40	675	3.2	65	100	1700	.10	6.4								486*
OCT	49	364	3.7	65	120	1800	.08	8.8								389*
NOV	42			80	100	1400	.15	5.0								416*
DEC	36			130	120	1600	.24	2.4								
TOTAL	401	3845	-	-	-	-	-	-	161	-	-	371	-	-	-	
AVG.	1.2 cu. ft./mil gal	769	3.3	87	86	1500	.20	5.3		3.4	80					

* Raw sludge haulage to Burlington Skyway plant.

**Chlorination period: May 15 - October 15.

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER

DIGESTED SLUDGE REMOVED

Date Due

ONTARIO WATER RESOURCES COMMISSION
DIVISION OF PLANT OPERATIONS.

TD 227/B87/E45/W38/1974

BURLINGTON ELIZABETH GARDENS

SEWAGE TREATMENT PLANT.

ANNUAL REPORTS.

1974

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